

STEAM AND CONDENSATE SYSTEMS

Steam System and Dryer Section Optimization Services



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Enhance Your Productivity. Improve Machine Efficiency.

Deublin, the proven leader in steam joint and siphon technology, now provides comprehensive services for steam system and dryer section optimization.

Improve Dryer Section Efficiency and Bottom Line

The dryer section is the largest consumer of steam in a paper machine, typically accounting for 55% of total energy cost. Consequently, the dryer section has the greatest influence on the economic viability of the paper making process.

An optimized steam and condensate system increases production capability and improves machine efficiency, leading to lower drying cost and increased profit. Optimizing dryer performance and steam utilization offer the greatest potential for improving the bottom line.

Deublin now provides comprehensive services from equipment supply, systems design, and integration installation to diagnostics and troubleshooting. A Deublin Steam System can help to revitalize your paper operations.



Take control of dryer section profitability. Let Deublin boost drying efficiency by optimizing your steam and condensate system.

Why Invest in Optimizing Your Existing Dryer section?

- **Improved operations.** Free your operators to make paper instead of dealing with steam system deficiencies.
- **Reduced cost.** Reduce requirements for energy-intensive steam by improving system efficiency and eliminating venting.
- **Higher quality.** Improve MD & CD profiles and reduce sheet picking.
- **Reduced downtime.** Eliminate flooding, reduce the operational impact of sheet breaks, and improve mechanical reliability of equipment.

Dryer Section Improvement Opportunities

Most older paper machines, and even many newer ones, have steam systems that can be optimized to eliminate steam loss and improve sheet quality.

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|-------------------------------------|----------------------------------|
| • Eliminate Flooding | • Maximize Seal Service Life |
| • Reduce High Differential Pressure | • Reduce High Motive Steam Usage |
| • Eliminate Steam Venting | • Increase Drying Capacity |
| • Eliminate Sheet Picking | • Increase System Flexibility |
| • Maximize Siphon Reliability | • Improve Sheet Moisture Profile |

Equipment Solutions

Systems are constructed by understanding the function and control scheme then using the proper component or piece of equipment, properly dimensioned for the specific application to achieve required control. We can specify and design the following components.

Separators:

High efficiency separators remove condensate from the blow-through steam bringing condensate carryover. This eliminates erosion of system components and increases heat transfer. Our design ensures a long-life and steam separation over 98% quality.

Thermocompressor:

Correctly sized thermocompressors minimize motive steam usage and maintain the differential pressure set point under all machine operating conditions. Our high efficiency design does not require any “anti-choke logic” with a two phase-flow piping and orifice plate design.

Turbulence Bars:

Turbulence bars disrupt rimming condensate to improve heat transfer and moisture profile.

Steam Joints and Siphons

Whether stationary or rotating, Deublin siphons efficiently remove condensate from dryer cylinders under all machine operating conditions.

When it comes to innovative steam solutions, trust Deublin. We specialize in providing state-of-the-art steam system designs to meet your needs:

- Blow-Thru Control Systems
- Desuperheater Systems
- Steam Box Supply Systems
- Advanced Steam Coil Drainage Systems
- Steam and Condensate System Components
- Cascade Systems
- Comprehensive Support including machine audits and services

Blow-Thru Control

Deublin's Blow-Thru Control offers automatic, continuous adjustment of differential pressure across the dryer section, adapting to all operating conditions without the need for operator intervention.

Key Features & Benefits:

- **Automatic Adjustment:** Blow-Thru Control continuously adjusts the differential pressure (DP) across the dryer section to optimize performance at all operating conditions.
- **Consistent Efficiency:** Maintains the ideal ratio of blow-through steam to condensate at all machine speeds and dryer pressures, ensuring reliable, efficient, and consistent dryer drainage.
- **Eliminates Dryer Flooding:** By maintaining the proper blow-through to condensate ratio, Deublin Blow-Thru Control prevents flooding in dryers, even during sheet breaks or varying machine speeds.
- **Optimized Dryer Drainage:** Automatically increases or decreases blow-through flow by adjusting the Dryer Section pressure as condensing loads change.



Run on Automatic with our original Blow-Thru control



Proprietary Equipment Design



Process Simulation Software



Energy and Productivity Enhancement

Why Choose Deublin Blow-Thru Control?

Unlike traditional DP Control or Flow Control, which operate to a fixed differential pressure (or pounds per hour of blow-through) across the dryer section, Deublin Blow-Thru Control focuses on maintaining optimal dryer drainage, ensuring the system adapts to changing conditions for maximum efficiency.

No Special Logic Required

The Deublin Blow-Thru Control system operates without the need for complex logic or secondary software. The controlled variable is simply changed from the traditional header-to-header DP to blow-through measurement.

Proven Results

Deublin's **Process Simulation** ensures the efficient design and optimal sizing of all equipment and piping for every dryer section.

Experience the power of Deublin Blow-Thru Control for **consistent, efficient, and cost-effective dryer drainage**.

Desuperheater Systems

Deublin's desuperheaters are engineered to efficiently reduce steam temperatures, ensuring optimal performance and safety in your steam systems.

Our steam atomizing desuperheaters work by introducing high-pressure water (typically condensate) as a fine mist into the steam flow. This water evaporates, absorbing heat from the steam and effectively lowering its temperature.

Why Choose Deublin Desuperheaters?

- **Advanced Temperature Control:** Achieve precise temperature regulation across a wide range of operating conditions.
- **Reliable Design:** Prevent water accumulation in supply lines, even during minimal steam demand.
- **Integrated Steam Source:** Utilizes the existing main steam supply for atomization, simplifying operation.

Steam Box Supply Systems

The Deublin Steam Box Supply is designed to regulate steam pressure and temperature, ensuring optimal performance for your system.

Our units feature steam atomizing desuperheaters, offering:

- **Enhanced Control:** Wide range of precision adjustments for diverse operating conditions.
- **Reliable Operation:** Prevents water accumulation in supply lines, even during low steam demand.
- **Streamlined Integration:** Atomizing steam is sourced directly from the main steam supply line for seamless functionality.

Deublin provides innovative solutions to improve steam system efficiency, safety, and reliability. Experience the difference with our advanced Steam Box Supply systems!

Advanced Steam Coil Drainage Systems

Achieve highest performance with Deublin's High-Efficiency Steam Coil Drainage Systems, designed to deliver reliable condensate drainage and maximum heat transfer efficiency across a wide range of applications:

- Pocket Ventilation Units
- Building Air Supply Units
- Roof Supply Units

Exclusive Process Simulation for Optimal Performance

Deublin's proprietary **process simulation** ensures that each system is custom designed for:

- Accurate sizing of equipment, valves, and lines.
- Optimized operation under all conditions.
- This ensures a system that performs reliably and efficiently, tailored to your specific needs.

Innovative Design Advantages

Traditional designs rely solely on gravity, leading to inconsistent condensing rates across tubes due to irregular airflow.

Deublin's cutting-edge design addresses these challenges with:

- **Fixed Nozzle Thermocompressor Technology:** Maintains a consistent pressure drop across coils by recirculating Blow-Thru Control.
- **Enhanced Heat Transfer:** Maximizes efficiency by ensuring proper drainage in all tubes within the coil bank.
- **Reliable Operation:** Prevents inefficiencies caused by uneven drainage and pressure imbalances.

Steam and Condensate System Components

Systems are designed by understanding the function and control scheme then using the proper component or piece of equipment, properly dimensioned for the specific application to achieve required control. We can specify and design the following components.

Key Components We Provide:

- Separator Skid Packages
- Proprietary Radial Separators
- Thermocompressors & Booster Thermocompressors
- Transmitters
- Condensate Pumps
- Valves: Plug Type, Disk Type, Ball Type, and Check Valves
- Safety Relief Valves
- Pressure Reducing Valves (PRV) and Systems
- Vacuum Condenser Systems

Machine audits and services

Deublin optimization services offer the means to improve dryer performance.

First, we perform a complete system assessment of the dryer section to determine how the existing dryer system is designed, built and operates under a variety of conditions.

Then, we apply customer-specific optimizations, ranging from complete, new system to minor rebuild and supplemental components, as needed, to improve the process, energy efficiency, productivity and product quality.

For example, saving a modest 10,000 lbs/hour of steam leaks and venting will save over \$250,000 annually.

Based on the paper grade, raw material, steam supply constraints and operating speed, Deublin engineers can design and integrate both existing and new components to properly size piping and equipment to meet specific operating objectives.

Deublin Steam System dryer optimization services also include:

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|---------------------------------------|---------------------|
| • Machine Audit | • Diagnostics |
| • System Design | • Reports |
| • Installation and Integration | • Equipment Supply |
| • Troubleshooting and Routine Service | • Operator Training |

Partner with Deublin to maximize energy efficiency and elevate your process performance.



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Notes

Since its founding in 1945 as a small, family-owned business, Deublin consistently has adhered to a policy of designing and building the best products of their kind in the world. The result of this policy has been continuous growth through the years, and for this we are grateful to our many loyal customers.

Today, Deublin is the world's largest manufacturer of Rotary Unions, with state-of-the-art factories, technical sales and services, and local stocking in 13 countries on four continents, as well as a worldwide distribution network operating in more than 60 countries. Our global organization and extensive catalog of field-tested products ensure a precise match between each customer's requirements and an engineered solution. Deublin has been part of the HOERBIGER Group since 2019 and forms the core of the Rotary Solution division.

We cordially invite you to visit our modern manufacturing facilities in Waukegan, Illinois, USA; Mainz, Germany; Monteveglio, Italy; Dalian, China; and Diadema, Brazil.



Our Global Headquarters in Waukegan, Illinois, U.S.A.



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**SERVICE AND STOCK ARE AVAILABLE
THROUGHOUT THE WORLD**